National Institute of Environmental Health Sciences

Mapping the current distribution and predicted spread of the leishmaniosis sand fly vector in the Madrid region (Spain) based on environmental variables and expected climate change

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Abstract:

Leishmaniosis caused by Leishmania infantum is a widespread zoonotic disease that is endemic in the Mediterranean basin. Based on prior point abundance data for the two sand fly vectors of leishmaniosis in the Madrid region (Phlebotomus perniciosus and Phlebotomus ariasi), models were constructed to predict the spatial distribution patterns of these vectors. The models were obtained by negative binomial regression of several environmental variables and then used to map vector distributions. To validate the maps, we used serological prevalence data of Leishmania infection in dogs and incidence data were obtained through questionnaires completed by veterinarians in the region. Seropositive dogs and veterinary clinics registering a higher incidence of canine leishmaniosis appeared closer to our modeled vector foci. In the face of climate change, we simulated the future distributions of the sand flies for each third of the 21st century and predicted their spread in the region.

Source: http://dx.doi.org/10.1089/vbz.2010.0109

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2, SRES B2

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Spain

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Fly-borne Disease

Fly-borne Disease: Leishmaniasis

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content